

**Earthquake Hazards Information for Multifamily Housing Owners and Public Policy –
San Francisco Bay Area
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Key Words – Education - Lay, Mitigation, Loss Estimation**

Investigations Undertaken

The effort has three main objectives:

1. Effectively communicate the risk of earthquake hazards to owners and tenants of multifamily residential buildings in the Bay Area using the Internet to enable that information to be neighborhood specific.
2. Provide mitigation and preparedness information appropriate to those owners and tenants in an easily accessible format on the same Internet site, linking mitigation to loss reduction.
3. Work to encourage use of this information to change the risk environment.

During the period from October 1, 2002 through September 30, 2003, this project focused on the following tasks:

1. Developing and evaluating a number of new ways to access the earthquake hazard information, including both ground shaking and liquefaction, risk, based on the geographic location of the residential building.
2. Rethinking ways to provide information on typical nonstructural damage for the shaking hazard level, as well as basic mitigation measures related to building contents.
3. Providing information on the types of damage to multifamily residential buildings by shaking hazard level, as well as basic ways to contact engineers, contractors, and building departments to initiate further analysis.
4. Developing basic information on the effects of liquefaction and shaking on transportation and utilities in residential neighborhoods, as well as associated preparedness information.
5. Collecting personal accounts of preparedness activities in order to use them to help motivate other multifamily residential building owners to act on the information provided.
6. Developing ways to publicize the availability of these data in creative ways.

Results – October 2002 Through September 2003

Accessing Ground Shaking and Liquefaction Hazard Information – The way in which the ground shaking and liquefaction hazard maps are accessed has been modified. The new “driver” for these maps asks the question about city and earthquake scenario on the same graphics-based web page, thus simplifying access for the user. Clearer links to “Frequently Asked Questions” and other information are now available. In addition, new ways to access the maps using zip code and address have been programmed. These new search tools are not yet “live” due to technical and policy considerations related to scenarios versus “maximum” or probabilistic shaking maps, as well as related to the appropriate resolution of the maps, that will again be discussed by the Review Committee for this project at its December 2003 meeting.

Nonstructural Damage and Mitigation Information – Prior to work on this project, ABAG had posted general ways of bracing and anchoring typical building contents on its web site. As a first step in improving that information, typical “solutions” have been separated so that bracing and anchoring of residential contents is now separate from office contents. The new residential pages are being dramatically expanded, as well as placed in a more “home”-based setting to make them appear more useful to the audience. Because many residents do not understand the cause-and-effect relationships between shaking and contents damage, we developed a new “quiz” that “tests” the user’s knowledge of the causes of nonstructural damage in a non-threatening way and, in the process, improves that knowledge.

Structural Damage and Mitigation Information – The information section that deals with the home’s structure includes an innovative quiz that owners and tenants of single-family homes, mobile homes, and apartments can take to “self-assess” the structural vulnerability of their home based on a combination of shaking intensity and structural type. It is based on the screening information developed by the Applied Technology Council (ATC 21 or FEMA 154), as well as a structural quiz developed for the City of San Jose for apartments with “tuck-under” parking. Structural retrofit resources include information on the retrofit process, lists of contractors, engineers, and home inspectors, success stories, money, and answers to frequently asked questions.

Infrastructure and Liquefaction Information – A creative way in getting Bay Area residents to be concerned about infrastructure disruptions and liquefaction was developed using another quiz focusing on the importance of family emergency plans. The effect of these impacts on travel and utilities was emphasized as an impetus for residents to develop family plans. Resources in this section include how to make a family emergency plan, appropriate emergency supplies, information on natural gas safety and shut-off valves, and other resources.

Success Stories Information – While many owners of single-family homes have retrofitted and several owners of mobile homes have retrofitted, few multifamily building owners have done so. ABAG staff contacted several local government building departments, particularly those with retrofit incentive programs, to get names of these owners. The final section on the web contains several success stories of single-family and mobile home owners. Only two stories currently discuss multifamily buildings. One documents the story of an apartment owner on the peninsula south of San Francisco). A second involves an apartment that had been retrofitted after the 1971 San Fernando earthquake that had minimal damage in the 1994 Northridge earthquake. We are attempting to contact additional apartment and condo owners who have retrofitted their buildings.

Publicity Planning – The “final draft” of the web site was reviewed at a meeting of ABAG’s Earthquake Hazard Outreach Review Committee on September 30, 2003. Relatively few changes were identified, so that this new section of ABAG’s popular web site was “released” on October 17, 2003 (the 14th anniversary of the Loma Prieta earthquake) with a press release and open house. The results of this and several other planned activities for publicizing the new information in conjunction with various partnering organizations is appropriate for inclusion in a report covering the next reporting period. Work on this effort, including issues more concerned with public policy, is continuing.

Non-Technical Summary

The Association of Bay Area Governments (ABAG) is developing a web-based *Home Quake Safety Toolkit* at <http://quake.abag.ca.gov/fixit>. The toolkit section on structures includes an innovative quiz to “self-assess” structural vulnerability based on shaking intensity and structural type. Structural retrofit resources include information on the retrofit process, lists of contractors, engineers, and home inspectors, success stories, and money. The nonstructural section includes a non-threatening quiz on causes of contents damage, ways to anchor contents, and chimney safety. In the third section, infrastructure disruptions and liquefaction are creatively explained using a quiz focusing on the importance of emergency planning. Resources in this section include family emergency plans, emergency supplies, and natural gas safety.

Reports Published

No reports had been published by September 30, 2003.